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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/522,724	08/25/2005	Stephane Cochet	264300US6PXCT	8508

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OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER	
NGUYEN, TU MINH	

ART UNIT	PAPER NUMBER
3748	

DATE MAILED: 05/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/522,724	COCHET ET AL.	
	Examiner	Art Unit	
	Tu M. Nguyen	3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 January 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *11-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *11-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *28 January 2005* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *012805*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. An Applicant's Preliminary Amendment filed on January 28, 2005 has been entered. Claims 1-10 have been canceled. Claims 11-25 have been added and are pending in this application.

Drawings

2. The drawings filed on January 28, 2005 are acceptable subject to correction of the informalities indicated on the attached "Notice of Draftsperson's Patent Drawing Review," PTO-948. In order to avoid abandonment of this application, correction is required in reply to the Office action. The correction will not be held in abeyance.

Specification

3. The abstract of the disclosure is objected to because on line 1, "upstream" should read --downstream--. Correction is required. See MPEP § 608.01(b).

4. The following guidelines illustrate the preferred layout for the specification of a utility application. These guidelines are suggested for the applicant's use.

Arrangement of the Specification

As provided in 37 CFR 1.77(b), the specification of a utility application should include the following sections in order. Each of the lettered items should appear in upper case, without underlining or bold type, as a section heading. If no text follows the section heading, the phrase "Not Applicable" should follow the section heading:

(a) TITLE OF THE INVENTION.
(b) CROSS-REFERENCE TO RELATED APPLICATIONS.
(c) STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT.
(d) INCORPORATION-BY-REFERENCE OF MATERIAL SUBMITTED ON A COMPACT DISC (See 37 CFR 1.52(e)(5) and MPEP 608.05. Computer program listings (37 CFR 1.96(c)), "Sequence Listings" (37 CFR 1.821(c)), and tables having more than 50 pages of text are permitted to be submitted on compact discs.) or
REFERENCE TO A "MICROFICHE APPENDIX" (See MPEP § 608.05(a). "Microfiche Appendices" were accepted by the Office until March 1, 2001.)
(e) BACKGROUND OF THE INVENTION.
(1) Field of the Invention.
(2) Description of Related Art including information disclosed under 37 CFR 1.97 and 1.98.
(f) BRIEF SUMMARY OF THE INVENTION.

(g) BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S).
(h) DETAILED DESCRIPTION OF THE INVENTION.
(i) CLAIM OR CLAIMS (commencing on a separate sheet).
(j) ABSTRACT OF THE DISCLOSURE (commencing on a separate sheet).
(k) SEQUENCE LISTING (See MPEP § 2424 and 37 CFR 1.821-1.825. A "Sequence Listing" is required on paper if the application discloses a nucleotide or amino acid sequence as defined in 37 CFR 1.821(a) and if the required "Sequence Listing" is not submitted as an electronic document on compact disc).

Claim Objections

5. Claims 11 and 24 are objected to because of the following informalities:

- Claim 11, line 6 of the claim, -- and-- should be inserted following "sensor;".

- Claim 24, lines 2-3 of the claim, "the method according to claim 11" should read --a method for control of operation of said nitrogen oxides trap--.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office Action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 11-18 and 21-25 are rejected under 35 U.S.C. 102(a) as being anticipated by Schnaibel et al. (WO 02/08594 A1) (see U.S. Patent 6,862,880 for the equivalence in English).

Re claims 11 and 24, as shown in Figures 1-2, Schnaibel et al. disclose a method and a device for control of operation of a nitrogen oxides trap (12') for an internal combustion engine (1) running on a lean mixture, wherein purging of the nitrogen oxides trap is commanded periodically, and a first oxygen sensor (14) is disposed in an exhaust pipe downstream from the nitrogen oxides trap, the method comprising:

- observing evolution of a meaningful signal representative of a signal (line 31) delivered by the first oxygen sensor (output voltage u(v) of the first oxygen sensor (14) depicted as line 31 is monitored); and

- using an increase of the meaningful signal from a first plateau of substantially constant level, reached following a variation subsequent to a changeover of the engine from running on a lean mixture to running on a rich mixture, as an indicator to command an end of purging (see lines 8-22 of column 8 in U.S. Patent 6,862,880).

Re claims 12 and 25, in the method and device of Schnaibel et al., a second oxygen sensor (13) disposed upstream from the nitrogen oxides trap is additionally used to deliver a reference signal (line 30) relative to which the evolution of the signal (line 31) delivered by the first oxygen sensor is compared to deliver the meaningful signal (see Figure 2).

Re claims 13-14, in the method of Schnaibel et al., the increase of the meaningful signal is detected by applying filtering of a first derivative of the meaningful signal and by comparing the filtered first derivative with a predetermined threshold (see lines 8-12 of column 8 in U.S. Patent 6,862,880).

Re claims 15-16, in the method of Schnaibel et al., the increase of the meaningful signal is detected by applying filtering of a second derivative of the meaningful signal and observing passage of the filtered second derivative through zero in decreasing threshold (see lines 13-18 of column 8 in U.S. Patent 6,862,880).

Re claims 17-18, in the method of Schnaibel et al., the increase of the meaningful signal is detected by taking a difference between an instantaneous value of the meaningful signal and a sliding mean of the meaningful signal, and by comparing the difference with a threshold (a gradient is obtained by computing a difference between an instantaneous value at a current time step and a value at a previous time step or a mean value of several data points at several previous time steps (also see lines 8-12 of column 8 in U.S. Patent 6,862,880)).

Re claims 21 and 22, in the method and device of Schnaibel et al., the first oxygen sensor (14) is chosen from among sensors of a sensor of lambda type, proportional oxygen sensor, nitrogen oxides detector, in which the oxygen-concentration measuring function is used (lines 6-12 of column 7 in U.S. Patent 6,862,880).

Re claim 23, in the method of Schnaibel et al., the first and second oxygen sensors are of different types (see lines 6-12 of column 7 in U.S. Patent 6,862,880).

8. Claims 11, 12, and 19-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Takaku et al. (U.S. Patent 6,502,388).

Re claims 11 and 24, as shown in Figures 1, 7, 12, and 13, Takaku et al. disclose a method and a device for control of operation of a nitrogen oxides trap (15) for an internal combustion engine (1) running on a lean mixture, wherein purging of the nitrogen oxides trap is commanded periodically, and a first oxygen sensor (25) is disposed in an exhaust pipe downstream from the nitrogen oxides trap, the method comprising:

- observing evolution of a meaningful signal representative of a signal delivered by the first oxygen sensor (output voltage Vo of the first oxygen sensor (25) is monitored); and

- using an increase of the meaningful signal from a first plateau of substantially constant level, reached following a variation subsequent to a changeover of the engine from running on a lean mixture to running on a rich mixture, as an indicator to command an end of purging (step 202 with YES answer and step 205; also Figure 7 and lines 33-44 of column 15).

Re claims 12 and 25, in the method and device of Takaku et al., a second oxygen sensor (14) disposed upstream from the nitrogen oxides trap is additionally used to deliver a reference signal, relative to which the evolution of the signal delivered by the first oxygen sensor is compared to deliver the meaningful signal (see Figure 7).

Re claims 19 and 20, in the method and device of Takaku et al., the increase of the meaningful signal, for a lambda sensor, is detected by comparing a voltage value delivered by the first oxygen sensor with a predetermined threshold (VS).

Re claims 21 and 22, in the method and device of Takaku et al., the first oxygen sensor (25) is chosen from among sensors of a sensor of lambda type, proportional oxygen sensor, nitrogen oxides detector, in which the oxygen-concentration measuring function is used.

Re claim 23, in the method of Takaku et al., the first and second oxygen sensors are of different types (see lines 18-41 of column 7).

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 17 and18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Schnaibel et al. as applied to claims 11 and 12, respectively, above, in view of design choice.

In the method of Schnaibel et al., a gradient of line 31 is typically obtained by computing a difference between an instantaneous voltage value at a current time step and a voltage value at an intermediate and previous time step. A regeneration phase is determined to be completed when the gradient exceeds a threshold value (lines 8-12 of column 8 in U.S. Patent 6,862,880).

Schnaibel et al., however, fail to disclose that the gradient or an increase of the meaningful signal is detected by taking a difference between an instantaneous value of the meaningful signal and a sliding mean of the meaningful signal, and by comparing the difference with a threshold.

With regard to applicants claim directed to a specified means to compute a gradient of a curve or line, the specification of such would have been an obvious matter of design choice well within the level of ordinary skill in the art depending on design variables, such as a type of the sensor (i.e., if the sensor exhibits a sharp change, then computing a gradient by using a mean value of several data points is more meaningful). Moreover, there is nothing in the record which establishes that the specification of such presents a novel of unexpected result (See *In re Kuhle*, 526 F.2d 553, 188 USPQ 7 (CCPA 1975)).

Prior Art

11. The IDS (PTO-1449) filed on January 28, 2005 has been considered. An initialized copy is attached hereto.

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure and consists of five patents: Sawada et al. (U.S. Patent 5.970,707), Hohne et al. (U.S. Patent 6,171,565), Schnaibel et al. (U.S. Patent 6,324,834), Bidner et al. (U.S. Patent 6,438,944), and Zhang et al. (U.S. Patent 6,588,251) further disclose a state of the art.

Communication

13. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Tu Nguyen whose telephone number is (571) 272-4862.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Thomas E. Denion, can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Tu M. Nguyen

TMN

May 11, 2006

Tu M. Nguyen

Primary Examiner

Art Unit 3748